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Source/Driver: (Name & Number from ISP, IAG milestone, Mgmt. Action, Corres. Control, etc.)	**Closure #:** (Outgoing Correspondence Control #, if applicable)	**Due Date**

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Originator Name	**QA Approval**	**Contractor Manager(s)**

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Kaiser-Hill Program Manager(s)	**Kaiser-Hill Director**

Document Subject:

TRANSMITTAL OF THE HISTORICAL RELEASE REPORT "DRAFT NO FURTHER ACTION JUSTIFICATION FOR THE PROPERTY UTILIZATION AND DISPOSAL (PU&D) STORAGE YARD (IHSS 170, IHSS 174A, AND IHSS 174B) - MCB-028-99

KH-00003NS1A June 30, 1999

Discussion and/or Comments:

Enclosed is the Historical Release Report "Draft No Further Action Justification Document for the Property Utilization and Disposal (PU&D) Storage Yard (IHSS 170, IHSS 174A, and IHSS 174B)." As requested, the format is the same used on the Annual Updates to the Historical Release Report and will be included within the 1999 Annual Update to the Historical Release Report. Potential Area of Concern (PAC)-1501, Asbestos Site (RMRS-99-331.UN), transmitted on February 24, 1999 will be also be included in the 1999 Annual Update to the Historical Release Report. Data summarized within this transmittal is from the OU10 Phase I RFI/RI (EG&G, 1995) and the 1997 Pre-remedial Investigation (RMRS, 1997). No additional groundwater data has been collected after 1997. One map of the PU&D Yard is attached with each copy. Three copies of this document are being submitted for Kaiser-Hill distribution and three copies for transmittal to the Department of Energy.

If you have any questions or comments concerning this transmittal please contact Mark Wood at extension 6689 or Nick Demos at extension 4605.

aw

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RMRS Records

ADMIN RECCRD

1/21

Draft
No Further Action
Justification Historical Release Report
for the
Property Utilization and Disposal
(PU&D) Storage Yard
(IHSS 170, IHSS 174A, and IHSS 174B)

Rocky Mountain Remediation Services, L.L.C.
and
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Rocky Flats Environmental Technology Site
Golden, Colorado

June 30, 1999

Document Classification
Review Waiver per
Classification Office
CEX-010-98

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PAC REFERENCE NUMBER: NW-170

IHSS Reference Number: 170, Buffer Zone Operable Unit

Unit Name: PU&D Storage Yard

Approximate Location: N751,500; E2,082,000

Date(s) of Operation or Occurrence

1974 – 1994

Description of Operation or Occurrence

Historically, the Property Utilization and Disposal (PU&D) storage yard was used for storing empty drums and dumpsters, cargo boxes, cable spools, and similar materials. The yard was divided in thirds with wire fences. The eastern third was used for storage of scrap metal and encompassed the drum and dumpster storage areas. The center third was used for the storage of equipment such as stainless steel tanks. The western third was used for the storage of excess property. The greatest potential for contamination was considered the eastern third because scrap metal may have been stored without prior decontamination and hazardous materials in drums and dumpsters were transferred in this area of the yard (DOE, 1992).

An incident involving a radioactively contaminated drum in the yard occurred in December 1987. An unknown powder spilled out of a drum while the drum, which had no bung and was believed to be empty, was being rolled over to a truck for off-Site recycling (DOE, 1992). Approximately 95 percent of the spilled powder was recovered with the affected soil and analyzed as a soil sample. The drum was found to contain a small amount of radioactive powder. This powder was not detected by exterior radiation monitoring; however results of a sample of the pure powder indicated 3,000 picoCuries per gram (pCi/g) plutonium, 1,000 pCi/g americium, and 100 pCi/g uranium-235. The powder was composed of 60 percent aluminum oxide and 32.5 percent chromium oxide (Rockwell, 1987; DOE, 1992).

An incident occurred in October 1990 involving drums stored in the yard. Approximately 100 empty drums were stored in the yard with the bungs unsecured. Rainwater that had entered the drums became contaminated with residual hazardous materials previously contained in the drums. The rainwater was not radioactively contaminated (DOE, 1992).

Detonation of unstable reactive chemicals was conducted on three occasions at the PU&D Yard on December 28, 1996, November 1, 1997, and November 27, 1997. The types of chemicals regarded as unstable (benzoyl peroxide, 1-methyl 3-nitro1-nitrosoguanidine, anhydrous ethyl ether, methyl ethyl ketone, ammonium perchlorate, kerosene, BZ alloy, red phosphorous) were permitted for disposal using detonation methods by the CDPHE and EPA. Air sampling and radiological surveys were conducted prior to and after each event and there were no reported releases associated with the operations (DOE, 1997).

Physical/Chemical Description of Constituents Released

A powder composed primarily of aluminum and chromium oxides, contaminated with plutonium, americium, and uranium, was spilled. Other releases may have occurred from leaking batteries, drums, and scrap metal stored without prior decontamination. Hazardous materials in drums and dumpsters were transferred in this area of the yard and may have resulted in release(s) (DOE, 1992).

Responses to Operation or Occurrence

An internal investigation report was generated after the unknown powder incident. PU&D, Waste Operations, and Waste Guidance groups were involved with the cleanup operations resulting from the rainwater in the drums. The liquid in the drums was disposed in accordance with Site waste procedures. The drum bungs were tightened to prevent potential re-occurrence and drum decontamination procedures were implemented (DOE, 1992).

Assessment of environmental contamination attributable to PU&D yard operations was initiated in accordance with the IAG as part of OU 10 (EG&G, 1995; RMRS, 1997) and a preremedial investigation to assess volatile organic compounds (VOC) in the subsurface soil.

Fate of Constituents Released to Environment

In 1993, 37 surface soil samples taken from IHSS 170 were analyzed for total metals, semivolatile organic compounds, pesticides, and polychlorinated biphenyl's (PCBs). No results were above current or proposed RFCA Tier II surface soil action levels.

Forty-six locations within and adjacent to IHSS 170, 174A, and 174B were surveyed with a HPGE detector and no anomalous radionuclide activities were observed. IHSS 170 overlaps with IHSS 174A and IHSS 174B (see sampling map attached as Figure 1).

A summary of surface soil detects for IHSS 170 is given in Table 1.

In 1994, approximately 235 soil gas locations were sampled for VOC analysis and 71 surface soil locations were sampled and analyzed for metals, SVOCs, pesticides and PCBs. The data, presented in EG&G (1995), indicated that VOCs were potentially present in subsurface soils along the eastern third of the yard (DOE, 1997).

A pre-remedial investigation of IHSSs 170, 174A and 174B was performed in August 1997 (RMRS, 1997). Characterization of the PU&D Yard was conducted to investigate the potential presence of a VOC contaminant source. The investigation consisted of 20 soil borings and 38 subsurface soil samples over IHSSs 170, 174A and 174B, which were analyzed for VOCs. In most cases, the borehole locations corresponded with the areas where VOC detections in soil gas samples were observed in the 1994 survey (RMRS, 1997). As a result, borehole locations within IHSS 170 were concentrated in the eastern third of the IHSS. Additionally, two boreholes were placed in areas of visibly stained soil. Table 2 summarizes the analytical results for soil borings associated with IHSS 170 (RMRS, 1997).

Table 1. Summary of surface soil analyses in IHSS 170 and comparison of detects to RFCA Tier I and Tier II Open Space Levels.

Contaminants of Concern	Location	Number of Surface Soil Samples	Number of Detects Above Proposed RFCA Tier II Open Space Level	Comparison Value (mg/kg)				Range of Values for Detects Above Proposed RFCA Tier II Open Space Level (mg/kg)	
				Proposed RFCA Tier I Open Space	Proposed RFCA Tier II Open Space	Current RFCA Tier I Open Space	Current RFCA Tier II Open Space		
Total metals	IHSS 170	37	0	Various	Various	Various	Various	N/A	N/A
Semivolatile organic compounds	IHSS 170	37	0	Various	Various	Various	Various	N/A	N/A
Pesticides	IHSS 170	37	0	Various	Various	Various	Various	N/A	N/A
PCBs	IHSS 170	37	0	224	224			N/A	N/A

Table 2. VOC analytical results for IHSS 170 subsurface soil (RMRS, 1997) in micrograms per kilogram (µg/Kg). A map of borehole locations is attached as Figure 1.

Borehole No.	Sample Depth (ft)	Methylene Chloride (µg/Kg)	Comparison Value for Methylene Chloride (µg/Kg)			Napthalene (µg/Kg)	Proposed Action Level for Napthalene (µg/Kg)		
			Proposed RFCA Tier I	Proposed RFCA Tier II	Current RFCA Tier I		Proposed RFCA Tier I	Proposed RFCA Tier II	Current RFCA Tier I
17797	4.4-4.9	2,100B	578	5.78	5,770	<630 (ND)	10,100,000	101,000	5,770,000
17897	5.4-5.9	<630 (ND)	578	5.78	5,770	390J	10,100,000	101,000	5,770,000
18097	5.0-5.5	440JB	578	5.78	5,770	<630 (ND)	10,100,000	101,000	5,770,000
18097 DUP	4.5-5.0	420JB	578	5.78	5,770	<630 (ND)	10,100,000	101,000	5,770,000
18197	5.0-5.5	2,600B	578	5.78	5,770	<630 (ND)	10,100,000	101,000	5,770,000
18297	5.0-5.5	400JB	578	5.78	5,770	<630 (ND)	10,100,000	101,000	5,770,000
18397(A)	5.0-5.5	400JB	578	5.78	5,770	<630 (ND)	10,100,000	101,000	5,770,000
18497(A)	5.0-5.5	410JB	578	5.78	5,770	<630 (ND)	10,100,000	101,000	5,770,000
18597(A)	5.0-5.5	370JB	578	5.78	5,770	<630 (ND)	10,100,000	101,000	5,770,000
18697(A)	5.0-5.5	400JB	578	5.78	5,770	<630 (ND)	10,100,000	101,000	5,770,000

DUP = Duplicate sample
A = Borehole location immediately adjacent (downgradient) to the IHSS
ND = Not detected
J = estimated concentration of analyte detected below the method practical quantitation limit
B = analyte detected in the method blank

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As indicated in Table 2, methylene chloride (a common laboratory contaminant) was detected in most of the subsurface soil samples; however, the contaminant was also detected in the method blank associated with the analyses. As a result, the identification of methylene chloride in the samples is most likely attributable to laboratory contamination.

Napthalene was estimated in one sample from borehole 17879 at 390 µg/Kg, substantially below the current Tier I (5,770,000 µg/Kg) and proposed Tier I and Tier II (10,100,000 and 101,000 µg/Kg, respectively) subsurface soil action levels (RMRS, 1997).

Each soil boring had a pre-work 17-point survey performed with a Field Instrument for the Detection of Low-Energy Radiation (FIDLER). Based on the survey results, the three highest FIDLER measurements were selected for surface soil samples and analyzed for isotopic radionuclides. The isotopic results were below background levels (RMRS, 1997).

Six groundwater samples were collected during the pre-remedial investigation of IHSSs 170, 174A and 174B. Three of the six samples were within the IHSS 170 boundary. Table 3 summarizes the analytical results for these three samples (RMRS, 1997).

Based on the analytical results from the pre-remedial investigation, a VOC contaminant source was not identified. Additionally, concentrations of VOCs equal to or above the RFCA Tier I subsurface soil action levels were not identified in the area of IHSS 170 (see Table 2) (RMRS, 1997). RFCA Tier I subsurface soil action levels for organic contaminants are based on leachability to groundwater at Tier I groundwater action levels. PCE detected in groundwater (see Table 3) indicates that the area was likely affected by previous drum storage and handling operations. However, PCE was not detected in the boreholes placed in the area indicating a residual source in excess of action levels does not remain.

The PCE concentration of 15 µg/L detected in groundwater from borehole 18197 is above the current and proposed RFCA Tier II groundwater action level of 5 µg/L. Trichlorotrifluoroethane was also detected in groundwater from IHSS 170 that also may indicate impact from past practices (i.e., freon-based lathe coolant). However, a RFCA action level or Programmatic Preliminary Remediation Goal (PPRG) for the compound has not been calculated. The 1,1,1-TCA was below the current and proposed RFCA Tier II groundwater action level of 200 µg/L.

Action/No Further Action Recommendation for IHSS 170

No surface soil analyses demonstrated the presence of contaminants above proposed RFCA Tier II Levels in IHSS 170.

Additionally, based upon surface and subsurface soil analytical data collected during the pre-remedial investigation, an existing source of contamination associated with IHSS 170 cannot be identified.

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Table 3. VOC analytical results for IHSS 170 groundwater (RMRS, 1997) in µg/L.

Borehole No.	Sample Depth (ft)	PCE (µg/L)	Comparison Value for PCE (µg/L)				1,1,1-TCA (µg/L)	Proposed Action Level for 1,1,1-TCA (µg/L)				Trichloro-trifluoroethane (µg/L)* *No existing RFCA action level or PPRG.
			Proposed RFCA Tier I	Proposed RFCA Tier II	Current RFCA Tier I	Current RFCA Tier II		Proposed RFCA Tier I	Proposed RFCA Tier II	Current RFCA Tier I	Current RFCA Tier II	
17897	7.33	<5 (ND)	500	5	500	5	<5 (ND)	20,000	200	20,000	200	3.5J
18097	7.2	<5 (ND)	500	5	500	5	<5 (ND)	20,000	200	20,000	200	<5 (ND)
18197	8.9	15	500	5	500	5	6.3	20,000	200	20,000	200	<5 (ND)

NA = Not Applicable
ND = Not detected
J = estimated concentration of analyte detected below the method practical quantitation limit
B = analyte detected in the method blank

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Furthermore, concentrations of VOCs equal to or above the current or proposed RFCA Tier I subsurface soil action levels were not identified in the area of IHSS 170 (see Table 2) (RMRS, 1997). RFCA Tier I subsurface soil action levels for organic contaminants are based on leachability to groundwater at Tier I groundwater action levels. As a result, IHSS 170 poses no threat to groundwater, and therefore, no threat to surface water.

Since IHSS 170 therefore poses no threat to either surface water or ground water, it is proposed as NFA. The recommendation for NFA is consistent with the criteria for recommending NFA decisions presented in RFCA.

Groundwater at IHSS 170 containing PCE concentrations above the RFCA Tier II groundwater action level is not considered in the Action/NFA recommendation because groundwater contamination at RFETS is addressed per RFCA by the Integrated Monitoring Program (RFETS, 1996). A plume of VOC contamination, which encompasses IHSS 170, has been delineated. The plume is monitored by the RFCA groundwater monitoring program at the perimeter. Monitoring indicates that there are no known or potential surface water impacts. Details on the groundwater monitoring program are reported annually in the Annual RFCA Groundwater Monitoring Report(s) (RMRS, 1998).

Comments

IHSS 170 overlaps with PACs NW-174A , NW-174B (IHSSs 174A and 174B) and PACs NW-1500, and NW-1501.

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DOE, 1992, *Historical Release Report for the Rocky Flats Plant*, Rocky Flats Plant, Golden, CO, June.

DOE, 1996, *Final Rocky Flats Cleanup Agreement*, Department of Energy, Rocky Flats Environmental Technology Site, Golden, CO, July.

DOE, 1997, *Annual Update for the Historical Release Report*, Revision 0 RF/RMRS-97-073.UN, Rocky Flats Environmental Technology Site, Golden, CO, September.

EG&G 1995, *Draft Technical Memorandum 1, OU 10, Other Outside Closures*, Rocky Flats Environmental Technology Site, Golden, CO, January.

RFETS, 1996, *Integrated Water Management Plan for the Rocky Flats Environmental Technology Site (Final)*, RF/ER-96-0037, RFETS, Golden, CO, August.

RMRS, 1997, *Data Summary Report for IHSSs 170, 174A, and 174B, Property Utilization and Storage Yard*, RF/RMRS-097-080.UN, Rocky Flats Environmental Technology Site, Golden, CO., September.

RMRS, 1998, *Draft 1997 Annual RFCA Groundwater Monitoring Report*, RF/RMRS-98-273.UN, Rocky Flats Environmental Technology Site, Golden, CO, September.

Rockwell, 1987, Internal Letter to File from F.J. Blaha. Subject: Empty Drum Recycling Incident of 12/4/87, December 17.

PAC REFERENCE NUMBER: NW-174A & NW-174B

IHSS Reference Number: 174, Buffer Zone Operable Unit

Unit Name: PU&D Drum Storage Facility (NW-174A)
PU&D Dumpster Storage Facilities (NW-174B)

Approximate Location: N752,000; E2,082,000

Date(s) of Operation or Occurrence

1974 – 1994

Description of Operation or Occurrence

Two areas within the PU&D storage yard (PAC NW-170) were specified for container storage. One area stored drums (PAC NW-174A) and the other was designated for a dumpster (PAC NW-174B). Until August 1985, the drum storage area was used for the storage of RCRA-regulated waste (DOE, 1992). Subsequent to this, the area was used for the storage of empty drums (RMRS, 1997a). All drums were externally monitored for radiation prior to shipment to the PU&D yard. The contents of drums originating from areas that handled radioactive materials were sampled and analyzed prior to shipment to the PU&D yard. At times, the level of radioactivity set for acceptance in the yard was exceeded and drums were returned to their building of origin. Dumpsters were also located at buildings and moved to the storage area when filled. The dumpsters and drums were stored directly on the ground surface. Material was stored in these areas prior to shipment for off-Site recycling (DOE, 1992). Storage in these areas stopped in 1994 and all containers were removed (RMRS, 1997a).

An incident in May 1982 identified two drums of liquid stored in the PU&D storage area as being pressurized with bulging drum heads. A third drum was noted to have exploded with the bottom blown out. No documentation was found which indicated a release to the environment as a result of these damaged drums. No other documentation was found describing other releases to the environment (DOE, 1992).

Physical/Chemical Description of Constituents Released

The drums held waste oils which contained hazardous constituents, waste paints, and spent paint thinner. Waste oils were typically derived from equipment and vehicle maintenance activities. The dumpster storage area was for the storage of stainless steel chips coated with freon-based or oil-based lathe coolant (DOE, 1992).

The dumpster contained stainless steel chips coated with lathe coolant. The lathe coolant was either freon-based or oil-based. Radioactive contamination of the chips was not expected due to the presence of administrative controls to prevent radioactively contaminated material from being shipped to the yard (DOE, 1992).

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Visible staining is apparent on the soil in the dumpster storage area from spills which occurred during transfer and from rainwater washing residual oil from metal shavings onto the ground (DOE, 1992).

Responses to Operation or Occurrence

Visual monitoring of the drum and dumpster storage areas was conducted periodically. Although visible staining on the ground surface was documented in the drum storage area, no documentation of leaks or spills was found (DOE, 1992).

The drums involved in the May 1982 incident were subsequently removed to the hazardous waste storage area (PAC NW-203) west of the Present Landfill and the contents identified. It is presumed that the drums were located in the drum storage area of the PU&D storage facility (DOE, 1992).

Assessment of environmental contamination attributable to PU&D yard operations was initiated in accordance with the IAG as part of OU 10 and as part of a separate, pre-remedial investigation (EG&G, 1995; RMRS, 1997a).

Fate of Constituents Released to Environment

In 1993, 25 surface soil samples (plus a field duplicate) from IHSS 174A were analyzed for total metals, semivolatile organic compounds, pesticides, and polychlorinated biphenyl's (PCBs). Results are summarized in Table 4 and given in detail in Table 5.

Four Aroclor-1254 results (0.920 to 9.000 mg/Kg) were observed in IHSS 174A (EG&G, 1995a) above the detection limit, and 3 of these were at concentrations greater than the current (2.32 mg/Kg) and proposed (2.24 mg/Kg) RFCA Tier II open space surface soil action levels. All of the Aroclor-1254 concentrations are less than the current (232 mg/Kg) and the proposed (224 mg/Kg) Tier I open space surface soil action levels.

Fourteen beryllium results were observed in IHSS 174A (EG&G, 1995a) above the detection limit. However, only 3 of these were at concentrations greater than the existing (4.08 mg/Kg) RFCA Tier II open space surface soil action levels, and only 4 were above the proposed (1.04 mg/Kg) RFCA Tier II open space surface soil action levels. All of the beryllium concentrations were less than the existing (408 mg/Kg) and proposed (104 mg/Kg) Tier I open space surface soil action levels (DOE, 1996). A map showing the locations having beryllium levels above proposed RFCA Tier II levels is attached as Figure 1.

Vanadium was observed in only 1 sample from IHSS 174A at a concentration of 43,400 mg/Kg which is less than the existing (53,800 mg/Kg) RFCA Tier II but above the proposed (13,400 mg/Kg) RFCA Tier I and II (both values are identical) surface soil action level.

Six surface soil samples from IHSS 174B were analyzed for total metals, semivolatile organic compounds, pesticides, and polychlorinated biphenyl's (PCBs). No results were above existing or proposed RFCA Tier II surface soil action levels.

Table 4. Summary of surface soil analyses in IHSS 174A and 174B, and comparison of detects to RFCA Tier I and Tier II Open Space Levels.

Contaminants of Concern	Location	Number of Surface Soil Samples	Number of Detects Above Proposed RFCA Tier II Open Space Level	Comparison Value (mg/kg)				Range of Values for Detects Above Proposed RFCA Tier II Open Space Level (mg/kg)	
				Proposed RFCA Tier I Open Space	Proposed RFCA Tier II Open Space	Current RFCA Tier I Open Space	Current RFCA Tier II Open Space		
Beryllium	**IHSS 174A**	**25**	**4**	104	1.04	408	4.08	**3.1**	**35.1**
Vanadium	**IHSS 174A**	**25**	**1***	13,400	13,400	53,800	53,800	**43,400**	**43,400**
Total metals (other than beryllium and vanadium)	IHSS 174A	25	0	Various	Various	Various	Various	N/A	N/A
PCBs: Aroclor 1254	**IHSS 174A**	**25**	**3**	224	2.24	232	2.32	**2.5**	**9.0**
Total metals	IHSS 174B	6	0	Various	Various	Various	Various	N/A	N/A
Semivolatile organic compounds	IHSS 174B	6	0	Various	Various	Various	Various	N/A	N/A
Pesticides	IHSS 174B	6	0	Various	Various	Various	Various	N/A	N/A
PCBs	IHSS 174B	6	0	224	2.24			N/A	N/A
Radionuclides	IHSS 174B	4	0	Various	Various	Various	Various	N/A	N/A

Table 5. Summary of individual sample locations, laboratory data, and comparison to RFCA Tier I and Tier II Levels for surface soil in IHSS 174A.

Contaminant of Concern	Total Number of Samples	Sample Location	Contaminant Level (mg/kg)	Comparison Value (mg/kg)			
				Proposed RFCA Tier I	Proposed RFCA Tier II	Current RFCA Tier I	Current RFCA Tier II
Aroclor -1254	25	**SS001293**	**3.400**	224	2.24	232	2.32
		SS001593	0.920	224	2.24	232	2.32
		SS001893	**2.500**	224	2.24	232	2.32
		SS001893 (duplicate)	**2.600**	224	2.24	232	2.32
		SS001993	**9.000**	224	2.24	232	2.32
		All other samples below detection limit.					
Beryllium	25	**SS001093**	**35.1**	104	1.04	408	4.08
		SS001193	**3.1**	104	1.04	408	4.08
		SS001793	0.46	104	1.04	408	4.08
		SS001893	**5.0**	104	1.04	408	4.08
		SS001893 (duplicate)	**4.9**	104	1.04	408	4.08
		SS001993	**10.7**	104	1.04	408	4.08
		SS002093	0.59	104	1.04	408	4.08
		SS002193	0.66	104	1.04	408	4.08
		SS002293	0.14	104	1.04	408	4.08
		SS002593	0.34	104	1.04	408	4.08
		SS002693	0.27	104	1.04	408	4.08
		SS002793	0.28	104	1.04	408	4.08
		SS002893	0.20	104	1.04	408	4.08
		SS002993	0.28	104	1.04	408	4.08
		SS003093	0.39	104	1.04	408	4.08
		All other samples below detection limit.					

Vanadium	25	**SS001093**	**43,400***	**13,400**	**13,400**	**53,800**	**53,800**
		SS001193	3,080	13,400	13,400	53,800	53,800
		SS001293	26	13,400	13,400	53,800	53,800
		SS001393	15.5	13,400	13,400	53,800	53,800
		SS001493	15.1	13,400	13,400	53,800	53,800
		SS001593	21.4	13,400	13,400	53,800	53,800
		SS001693	19.8	13,400	13,400	53,800	53,800
		SS001793	140	13,400	13,400	53,800	53,800
		SS001893	5300	13,400	13,400	53,800	53,800
		SS001893 (duplicate)	5110	13,400	13,400	53,800	53,800
		SS001993	11300	13,400	13,400	53,800	53,800
		SS002093	1500	13,400	13,400	53,800	53,800
		SS002193	2210	13,400	13,400	53,800	53,800
		SS002293	19.2	13,400	13,400	53,800	53,800
		SS002393	22.4	13,400	13,400	53,800	53,800
		SS002493	19	13,400	13,400	53,800	53,800
		SS002593	23.5	13,400	13,400	53,800	53,800
		SS002693	22.8	13,400	13,400	53,800	53,800
		SS002793	49.9	13,400	13,400	53,800	53,800
		SS002893	365	13,400	13,400	53,800	53,800
		SS002993	194	13,400	13,400	53,800	53,800
		SS003093	52.9	13,400	13,400	53,800	53,800
		SS003193	185	13,400	13,400	53,800	53,800
		SS003293	36	13,400	13,400	53,800	53,800
		SS003393	22.8	13,400	13,400	53,800	53,800
		SS003493	16	13,400	13,400	53,800	53,800

In 1994, approximately 235 soil gas locations were sampled for VOC analysis and 71 surface soil locations were sampled and analyzed for metals, SVOCs, pesticides and PCBs. The data, presented in EG&G (1995), indicated that VOCs were potentially present in subsurface soils along the eastern third of the yard (DOE, 1997).

A pre-remedial investigation of IHSSs 170, 174A and 174B was performed in August 1997 (RMRS, 1997b). Characterization of the PU&D Yard was conducted to investigate the potential presence of a VOC contaminant source capable of impacting groundwater. The investigation consisted of 20 soil borings and 38 subsurface soil samples analyzed for VOCs. In most cases, the borehole locations correspond with the areas where VOC detections in soil gas samples were observed in the 1994 survey (RMRS, 1997b). Borehole locations associated with IHSS 174A were placed within the IHSS boundary and immediately northwest where VOC detections in soil gas were observed. One borehole (17997) was located within the IHSS 174B boundary. Table 6 summarizes the analytical results for soil borings associated with IHSSs 174A and 174B (RMRS, 1997b).

As shown in Table 6, tetrachloroethene (PCE) was detected throughout the sampled interval in borehole 17497 located in IHSS 174A. The PCE concentrations observed were below the current (11,500 μg/Kg) RFCA Tier I subsurface soil action level, although 3 were above the proposed Tier II action level (31.5 μg/Kg) and one was above the proposed Tier I action level (3,150 μg/Kg).

Trichloroethene (TCE) was also detected in one sample (Borehole 18997) at an estimated (J-designated) concentration of 360 μg/Kg which is below the current and proposed RFCA Tier I subsurface action levels (9270 and 3280 μg/Kg, respectively), but above the proposed RFCA Tier II action level (32.8 μg/Kg).

Methylene chloride (a common laboratory contaminant) was also detected in most of the subsurface soil samples from IHSS 174B and was also detected in the method blank(s) associated with some of the analyses. As a result, the identification of methylene chloride in the samples is most likely attributable to laboratory contamination.

No contamination was detected in subsurface soils from IHSS 174B (RMRS, 1997b).

Each soil boring had a pre-work 17-point survey performed with a FIDLER. Based on the survey results, the three highest FIDLER measurements were selected for surface soil samples and analyzed for isotopic radionuclides. Although the isotopic results were below background levels, it is noted that the highest FIDLER measurements were within IHSS 174B (RMRS, 1997b).

Six groundwater samples were collected during the pre-remedial investigation of IHSSs 170, 174A and 174B. Of the six samples, one sample from IHSS 174A and 174B (i.e., one from each IHSS) was collected. Table 6 summarizes the analytical results (RMRS, 1997b).

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Table 6. VOC analytical results for IHSS 174A and IHSS 174B subsurface soil (RMRS, 1997b) in µg/Kg. A map of borehole locations is attached as Figure 1.

Borehole No.	Sample Depth (ft)	PCE µg/Kg	Comparison Value for PCE µg/Kg			TCE µg/Kg	Comparison Value for TCE µg/Kg			Methylene Chloride µg/Kg	Comparison Value for Methylene Chloride µg/Kg		
			Proposed RFCA Tier I	Proposed RFCA Tier II	Current RFCA Tier I		Proposed RFCA Tier I	Proposed RFCA Tier II	Current RFCA Tier I		Proposed RFCA Tier I	Proposed RFCA Tier II	Current RFCA Tier I
17097(A)	5.0-5.5	<630 (ND)	3,150	31.5	11,500	<630 (ND)	3,280	32.8	9,270	620J	578	5.78	5,770
17097(A)	10.0-10.5	<630 (ND)	3,150	31.5	11,500	<630 (ND)	3,280	32.8	9,270	664	578	5.78	5,770
17197(A)	5.5-6.0	<630 (ND)	3,150	31.5	11,500	<630 (ND)	3,280	32.8	9,270	685	578	5.78	5,770
17197(A)	10.25-10.5	<630 (ND)	3,150	31.5	11,500	<630 (ND)	3,280	32.8	9,270	689	578	5.78	5,770
17297(A)	5.0-5.5	<630 (ND)	3,150	31.5	11,500	<630 (ND)	3,280	32.8	9,270	1,600B	578	5.78	5,770
17297(A)	10.5-11.0	<630 (ND)	3,150	31.5	11,500	<630 (ND)	3,280	32.8	9,270	1,400B	578	5.78	5,770
17497	4.3-4.9	**750**	3,150	31.5	11,500	<630 (ND)	3,280	32.8	9,270	1,300B	578	5.78	5,770
17497	8.5-9.0	**830**	3,150	31.5	11,500	<630 (ND)	3,280	32.8	9,270	<630 (ND)	578	5.78	5,770
17497	11.0-11.5	**5,700**	3,150	31.5	11,500	<630 (ND)	3,280	32.8	9,270	<630 (ND)	578	5.78	5,770
17597	4.7-5.3	<630 (ND)	3,150	31.5	11,500	<630 (ND)	3,280	32.8	9,270	<630 (ND)	578	5.78	5,770
17597	11.0-11.5	<630 (ND)	3,150	31.5	11,500	<630 (ND)	3,280	32.8	9,270	<630 (ND)	578	5.78	5,770
17597(DUP)	10.5-11.0	<630 (ND)	3,150	31.5	11,500	<630 (ND)	3,280	32.8	9,270	330JB	578	5.78	5,770
17697	5.5-6.0	<630 (ND)	3,150	31.5	11,500	<630 (ND)	3,280	32.8	9,270	530JB	578	5.78	5,770

17697	9.8-10.3	<630 (ND)	3,150	31.5	11,500	<630 (ND)	3,280	32.8	9,270	610JB	578	5.78	5,770
17997	5.0-5.5	<630 (ND)	3,150	31.5	11,500	<630 (ND)	3,280	32.8	9,270	<630 (ND)	578	5.78	5,770
17997	9.5-10.0	<630 (ND)	3,150	31.5	11,500	<630 (ND)	3,280	32.8	9,270	<630 (ND)	578	5.78	5,770
17997	15.0-15.5	<630 (ND)	3,150	31.5	11,500	<630 (ND)	3,280	32.8	9,270	<630 (ND)	578	5.78	5,770
17997	19.5-20.0	<630 (ND)	3,150	31.5	11,500	<630 (ND)	3,280	32.8	9,270	<630 (ND)	578	5.78	5,770
18997	5.0-5.5	<630 (ND)	3,150	31.5	11,500	**360J**	3,280	32.8	9,270	430JB	578	5.78	5,770
18997	9.5-10.0	<630 (ND)	3,150	31.5	11,500	<630 (ND)	3,280	32.8	9,270	3,000JB	578	5.78	5,770

DUP = Duplicate sample
A = Borehole location immediately adjacent to the IHSS
ND = Not detected
J = estimated concentration of analyte detected below the method practical quantitation limit
B = analyte detected in the method blank

Table 7. VOC analytical results for IHSS 174A and IHSS 174B groundwater (RMRS, 1997b) in µg/L.

Borehole No.	Sample Depth (ft)	PCE (µg/L)	Comparison Value for PCE (µg/L)				1,1,1-TCA (µg/L)	Proposed Action Level for 1,1,1-TCA (µg/L)				Trichloro-trifluoroethane (µg/L)*
			Proposed RFCA Tier I	Proposed RFCA Tier II	Current RFCA Tier I	Current RFCA Tier II		Proposed RFCA Tier I	Proposed RFCA Tier II	Current RFCA Tier I	Current RFCA Tier II	*No existing RFCA action level or PPRG.
17497	**10.3**	**1,700**	**500**	**5**	**500**	**5**	<5 (ND)	20,000	200	20,000	200	<250 (ND)
17997	7.9	<5 (ND)	500	5	500	5	21 J	20,000	200	20,000	200	40
17997 DUP	7.9	<5 (ND)	500	5	500	5	<5 (ND)	20,000	200	20,000	200	36

NA = Not Applicable
ND = Not detected
J = estimated concentration of analyte detected below the method practical quantitation limit
B = analyte detected in the method blank

Based on the analytical results from the pre-remedial investigation, a VOC contaminant source equal to or above the RFCA Tier I subsurface soil action levels was not identified in either IHSS 174A or IHSS 174B (see Table 4) (RMRS, 1997b). RFCA Tier I subsurface soil action levels for organic contaminants are based on leachability to groundwater at Tier I groundwater action levels. PCE is observed in the subsurface soil sampled from borehole 17497 in IHSS 174A as well as groundwater from that borehole (see Table 7) indicating that the area was likely affected by previous drum storage and handling operations. However, the concentrations detected in the 7 boreholes placed in the IHSS 174A area do not indicate that a residual source in excess of existing RFCA Tier I action levels remains.

The PCE concentration of 1,700 µg/L detected in groundwater from borehole 17497 is above the RFCA Tier I and Tier II groundwater action levels of 500 and 5 µg/L, respectively. Trichlorotrifluoroethane was detected in groundwater from IHSS 174B that also may indicate impact from past waste storage and handling practices (i.e., freon-based lathe coolant). However, a RFCA action level or PPRG for the compound has not been calculated.

Action/No Further Action Recommendation

While surface soil sampling data identify some locations in IHSS 174A which exceed proposed RFCA Tier II levels for beryllium and for Aroclor 1254, and one location which exceeds the proposed Tier I and II levels for vanadium, these are isolated hits and are not representative of the area. For example, the location (SS001093) with the highest beryllium value is also the location of the single vanadium value above Tier I and Tier II.

Five subsurface soil borings were located in IHSS 174A. Tetrachloroethene (PCE) was detected throughout the sampled interval in borehole 17497 with a maximum concentration of 5.7 mg/Kg. TCE was also detected in one sample from borehole 18997 at an estimated concentration of 360 µg/Kg. Methylene chloride was detected at 3 mg/Kg. Both PCE and methylene chloride are below the existing RFCA Tier I subsurface soil action levels but above the proposed RFCA Tier I subsurface soil action levels (3.151 and 0.528 mg/Kg, respectively). However, groundwater monitoring data indicates the contamination in IHSS 174A has stabilized in groundwater and the VOCs observed in subsurface soil and groundwater should be considered for natural attenuation. No threat to surface water is expected. Additionally, no elevated FIDLER readings were observed. Therefore, IHSS 174A is proposed as NFA.

Based on the subsurface soil sampling data, a source of contamination associated with IHSS 174B cannot be identified. Trichlorotrifluoroethane, detected in groundwater, was not detected in the subsurface soil indicating that if a contaminant source existed, concentrations have attenuated. As a result, IHSS 174B poses no threat to groundwater and therefore is proposed as NFA.

Groundwater at IHSS 174A containing PCE concentrations above the RFCA Tier I and II groundwater action level is not considered in the Action/NFA recommendation because groundwater contamination at RFETS is addressed per RFCA by the Integrated Monitoring Program (RFETS, 1996). A plume of VOC contamination, which encompasses IHSS 174A, has been delineated. The plume is monitored by the RFCA groundwater monitoring program at the perimeter. Monitoring indicates that there are no known or potential surface water impacts. Details on the groundwater

monitoring program are reported annually in the Annual RFCA Groundwater Monitoring Report(s) (RMRS, 1998).

Comments

IHSSs 174A and 174B overlap with IHSS 170.

The dumpster storage area was located along the western side of the east third of the PU&D Yard. The dumpsters were stored in various locations over an area along the fence in an area significantly larger than that indicated on the IAG map. There is visible staining on the ground in the dumpster storage area (DOE, 1992).

These areas were RCRA-regulated units because they contained hazardous waste and were in operation in 1981. An Interim Status Closure Plan for these storage areas was prepared in 1986 and revised in 1988. These RCRA closure plans were superseded by the RFI/RI process outlined in the IAG. EPA aerial photos reveal no activity in the PU&D area in August 1971 but clearly indicate that the area was used for storage in August 1978 (DOE, 1992).

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